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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/903,610	07/13/2001	Toshimori Miyakoshi	1272.C0465	2208

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EXAMINER

NGUYEN, LAM S

ART UNIT PAPER NUMBER

2853

DATE MAILED: 03/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/903,610	Applicant(s) MIYAKOSHI, TOSHIMORI	
	Examiner LAM S NGUYEN	Art Unit 2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rezanka (US 5751302) in view of Ohsima et al. (EP 0569201 A).

Referring to claims 1, 6, 7, 12-13:

Rezanka discloses a method for controlling the drive energy of an ink jet print apparatus wherein a print element is driven to eject an ink from an ink jet print head to a printing medium for performing printing, the method comprising:

a first step for selecting a plurality of various drive energies (FIG. 5, step 50 and 52);

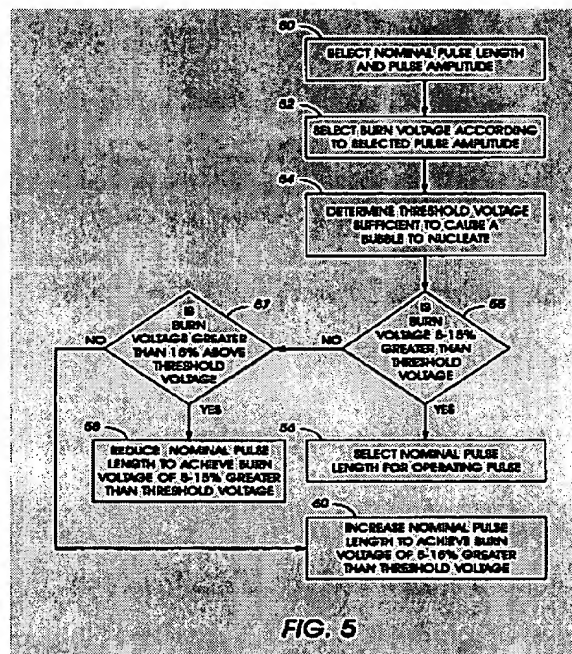
a second step for monitoring temperature of the ink jet print head (column 2, line 45-55: Based on the temperature of the ink in the printhead, a combination of power level and time duration of the electrical input signal for heating elements is selected.

a third step for judging a threshold drive energy between a condition where an ink ejection of the ink jet print head was induced and a condition where the ink ejection of the ink jet print head was not induced (FIG. 5, step 54: "Determine threshold voltage sufficient to cause a bubble to nucleate") using a value for each supplied drive energy and a value for each monitored temperature (FIG. 5, steps 50, 52 and column 2, line 45-55: Based on the temperature of the ink

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in the printhead, a combination of power level and time duration of the electrical input signal for heating elements is selected. Next in step 54, a threshold voltage is determined based on the selected pulse duration and level);

a fourth step for determining a drive condition for ejecting ink on the basis of the threshold drive energy, and a fifth step for driving the print element on the basis of the determined drive condition (FIG. 5, steps 55-58 and 60: The nominal pulse length is reduced or increased based on the comparison between the burn voltage and the threshold voltage).



Rezanka does not disclose the comprising of the steps for supplying a plurality of various drive energies for carrying out one ejecting operation successively to the ink jet print head and monitoring temperature of the ink jet print head in each supply of the plurality of various drive energies for carrying out one ejecting operation, the temperature reflecting a temperature change caused by each supplied drive energy.

Oshima et al. disclose a method for controlling a printhead, wherein the method comprises the steps for supplying a plurality of various drive energies for carrying out one ejecting operation successively to the ink jet print head (FIG. 13, steps S15 and S17: Energies E2 and E1 are applied to a discharge heater to discharge an ink drop) and monitoring temperature of the ink jet print head in each supply of the plurality of various drive energies for carrying out one ejecting operation, the temperature reflecting a temperature change caused by each supplied drive energy (FIG. 13, steps S16 and S18: Measure temperature change dT by each drive energy E2 and E1).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to modify the method for controlling the printhead as disclosed by Rezanka such that supplying various drive energies for carrying out one ejecting operation successively to the ink jet print head and monitoring temperature caused by each supplied drive energy as disclosed by Ohshima et al. The motivation of doing so is to improve the accuracy of the detected temperature during the ejection of the printhead as taught by Ohshima et al. (column 22, line 37-52).

Rezanka also discloses the following claimed invention:

Referring to claims 2, 8: wherein in said first step, a difference in the amount of each drive energy supplied to the ink jet print head is generated by changing a pulse width of a drive pulse signal applied to the print element (FIG. 5, step 50: The nominal pulse length is selected).

Referring to claims 3, 9: wherein in said first step, an initial drive energy supplied is determined on the basis of drive condition information stored in the ink jet print head (column 6, line 52-60).

Referring to claim 14: wherein the memory provided on the ink jet print head is an EEPROM (FIG. 2, element 66).

Referring to claims 4, 5, 10, 11: wherein in said fifth step, when the determined drive condition is different from drive condition information stored in said ink jet print head, drive condition information stored in the ink jet print head is updated with the determined drive condition data or when both are different, drive energy to drive the print element is changed (FIG. 5, step 55-58 and 60: Reducing or increasing nominal pulse length).

Referring to claims 15, 16: wherein energy supply to the ink jet print head is made by applying drive signals to heat generation elements of the ink jet print head (FIG. 2, element 28).

Response to Arguments

Applicant's arguments with respect to claims 1, 6-7, 12-13 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAM S NGUYEN whose telephone number is (571)272-2151. The examiner can normally be reached on 7:00AM - 3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, STEPHEN D MEIER can be reached on (571)272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LN

March 16, 2004



HAI PHAM
PRIMARY EXAMINER